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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

DI GRAZIO, JEANNE A

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 03/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/014,290

Applicant(s)

MIN ET AL.

Examiner

Jeanne A. Di Grazio

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

Priority to Korean Application No. 2001-0024268 (May 4, 2001) is claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 2, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara et al. (US '551 B1) in view of Lee et al. (US 2002/0000915 A1).

Per claim 1: Kawahara has an LCD part and a fingerprint capture sensor arranged on the same plane (Figure 1, for example), the LCD part and the fingerprint capture sensor being simultaneously arranged through the same manufacturing process (Col. 4, Lines 33-41).

Kawahara does not appear to specify the use of a backlight for the LCD part and the fingerprint capture sensor as a light source; however, Lee states that a conventional fingerprint sensor array includes a backlight [0006]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara in view of Lee to include a backlight as a light source for the LCD and fingerprint sensor to apply light to a fingerprint and LCD.

Per claim 2: Kawahara has a region in which the fingerprint sensor is formed smaller than a region in which the LCD part is formed (Figures 1 and 2, for example) and the fingerprint capture sensor obtains a fingerprint image by a one-dimensional line scan method (Col. 6, Lines 1-7). It would have been obvious to one of ordinary skill in the art at the time the invention was

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made to have the fingerprint sensor part smaller than the LCD part because the fingerprint sensor only requires a small space within which to read a (small) fingerprint. To have a fingerprint sensor as large as or larger than the LCD region would result in a larger device than is necessary and increased manufacturing cost. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a one-dimensional line scan method to save installation space when being mounted to a small sized mobile terminal (Col. 6, Lines 10-13).

Per claim 4: Kawahara also has a drive circuit for driving each of the LCD device and fingerprint sensor (Col. 3, Lines 19-21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have an integrated driving unit to reduce manufacturing cost, improve yield, and to save space.

2. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara et al.

(US '551 B1) in view of Lee et al. (US 2002/0000915 A1) in further view of Kawahara et al. (US '563 B1).

Per claim 3: Kawahara (551) does not appear to specify separate drive units; however, Kawahara (563) does have drive circuits [ABS.]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara (551) in view of Kawahara (563) to have a drive circuit for the LCD part and a drive circuit for the fingerprint sensor part for improved versatility as noted in Kawahara (563).

3. Claims 5, 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara et al. (US '551 B1) in view of Lee et al. (US 2002/0000915 A1) in further view of Kurihara et al. (US '529 B1).

Per claim 5: Kawahara has a TFT panel including an LCD part formed in a region of the TFT panel and a fingerprint capture part formed in the remaining part of the TFT panel (Figures 5A and 5B, for example). Kawahara also has a liquid crystal element attached only to a top of the LCD part of the TFT panel (Figures 5A and 5B). Kawahara does not appear to have a backlight and TFT panel attached to a top of the backlight; however, Lee has a backlight and a TFT panel attached to a top of the backlight (See Figure 8A, for example). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara in view of Lee to include a backlight to apply light to a fingerprint and LCD as noted. Kawahara does not appear to have a color filter attached only to a top of the liquid crystal element; however, Kurihara has a color filter that is formed only in the liquid crystal region and not in the sensor region (See Figure 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara in view of Kurihara to include the use of a color filter on a liquid crystal element for an LCD and fingerprint sensor that has high resolution (Col. 6, Lines 37-39).

Per claim 7: Kawahara has a region in which the fingerprint sensor is formed smaller than a region in which the LCD part is formed (Figures 1 and 2, for example) and the fingerprint capture sensor obtains a fingerprint image by a one-dimensional line scan method (Col. 6, Lines 1-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the fingerprint sensor part smaller than the LCD part because the fingerprint sensor only requires a small space within which to read a (small) fingerprint. To have a fingerprint sensor as large as or larger than the LCD region would result in a larger device than is necessary and increased manufacturing cost. It would have been obvious to one of ordinary skill in the art

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at the time the invention was made to use a one-dimensional line scan method to save installation space when being mounted to a small sized mobile terminal (Col. 6, Lines 10-13).

Per claim 9: Kawahara also has a drive circuit for driving each of the LCD device and fingerprint sensor (Col. 3, Lines 19-21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have an integrated driving unit to reduce manufacturing cost, improve yield, and to save space.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara et al.

(US '551 B1) in view of Lee et al. (US 2002/0000915 A1) in further view of Kurihara et al. (US '529 B1) in further view of Lan (WO 01/69520 A2).

Per claim 6: Kawahara does not appear to have a transparent protective layer on top of the fingerprint capture part of the TFT panel so that a top surface of the fingerprint capture part and a top surface of the color filter are level; however, Lan has a protective layer over the surface of the sensor and color filter (Page 61, Lines 16-22). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara in view of Lan to provide necessary planarization and protection for the underlying sensor layer (Id.).

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara et al.

(US '551 B1) in view of Lee et al. (US 2002/0000915 A1) in further view of Kurihara et al. (US '529 B1) in further view of Kawahara et al. (US '563 B1).

Per claim 8: Kawahara (551) does not appear to specify separate drive units; however, Kawahara (563) does have drive circuits [ABS.]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara (551) in view of

Kawahara (563) to have a drive circuit for the LCD part and a drive circuit for the fingerprint sensor part for improved versatility as noted in Kawahara (563).

6. Claims 10-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara et al. (US '551 B1) in view of Lee et al. (US 2002/0000915 A1) in further view of Lan (WO 01/69520 A2).

Per claim 10: Kawahara has a TFT panel including an LCD part formed in a region of the TFT panel (Figures 5A and 5B, for example). Kawahara also has a liquid crystal element attached to a top of the LCD part of the TFT panel (Figures 5A and 5B). Kawahara does not appear to have a backlight and TFT panel attached to a top of the backlight; however, Lee has a backlight and a TFT panel attached to a top of the backlight (See Figure 8A, for example). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara in view of Lee to include a backlight to apply light to a fingerprint and LCD as noted. Kawahara does not appear to have a color filter attached to a top of the liquid crystal element and extended to cover a region in which the LCD part is not formed and a fingerprint sensor formed in a region of the color filter covering the region in which the LCD part is not formed; however, Lan has these limitations (Page 61, Lines 16-22). Lan has a color filter in a sensor element. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara in view of Lan to selectively permit emitted light of a particular color or wavelength to enter the fingerprint sensor and to be transmitted through the fingerprint sensor to improve illumination of the fingertip (Lan, Page 61, Lines 16-22).

Per claim 11: Kawahara does not appear to have a transparent protective layer formed on a surface of the region in which the fingerprint sensor part is not formed on the color filter such

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that a color filter and a surface of the fingerprint sensor are leveled; however, Lan has multiple protective layers for planarization. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara in view of Lan to provide necessary planarization and protection for the underlying sensor layer as noted in Lan.

Per claim 12: Kawahara has a region in which the fingerprint sensor is formed smaller than a region in which the LCD part is formed (Figures 1 and 2, for example) and the fingerprint capture sensor obtains a fingerprint image by a one-dimensional line scan method (Col. 6, Lines 1-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the fingerprint sensor part smaller than the LCD part because the fingerprint sensor only requires a small space within which to read a (small) fingerprint. To have a fingerprint sensor as large as or larger than the LCD region would result in a larger device than is necessary and increased manufacturing cost. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a one-dimensional line scan method to save installation space when being mounted to a small sized mobile terminal (Col. 6, Lines 10-13).

Per claim 14: Kawahara also has a drive circuit for driving each of the LCD device and fingerprint sensor (Col. 3, Lines 19-21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have an integrated driving unit to reduce manufacturing cost, improve yield, and to save space.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara et al. (US '551 B1) in view of Lee et al. (US 2002/0000915 A1) in further view of Lan (WO 01/69520 A2) in further view of Kawahara et al. (US '563 B1).

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Per claim 13: Kawahara (551) does not appear to specify separate drive units; however, Kawahara (563) does have drive circuits [ABS.]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kawahara (551) in view of Kawahara (563) to have a drive circuit for the LCD part and a drive circuit for the fingerprint sensor part for improved versatility as noted in Kawahara (563).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (703)305-7009. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703)746-8741 for regular communications and (703)746-8741 for After Final communications.


Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Jeanne Andrea Di Grazio

Robert Kim, SPE

JDG

March 21, 2003


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